What is claimed is:

1. An observation optical system comprising:

an observation image forming member which forms an observation image to be observed by an observer; and

an eyepiece optical member which introduces the observation image formed by said observation image forming member into an exit pupil formed at a position of an eye of the observer,

wherein said eyepiece optical member comprises, at least, a first prism and a second prism,

wherein said first prism comprises, at least, a first entrance surface through which rays from the observation image enter said first prism, a reflecting surface which reflects the rays inside said first prism, and a first exit surface through which the rays exit out of said first prism, said first entrance surface, said reflecting surface, and said first exit surface being arranged with a first prism medium between,

wherein said second prism comprises, at least, a second entrance surface through which the rays emergent from said first prism enter said second prism and a second exit surface through which the rays exit out of said second prism, said second entrance surface and said second exit surface being arranged with a second prism medium between,

wherein said first prism and said second prism are configured to be joined to one another via a hologram element interposed between said first exit surface and said second entrance surface,

wherein said reflecting surface of said first prism is shaped as a concave curved surface to give a positive power for rays

reflected therefrom,

wherein said first entrance surface of said first prism is shaped as a curved surface to give a power for rays transmitted therethrough, and

wherein said second exit surface of said second prism is shaped as a curved surface to give a power for rays transmitted therethrough.

2. A photographing optical system comprising:

an image pickup element disposed on an image surface for photographing an image of an object;

an aperture stop disposed on a pupil surface for regulating brightness of a beam of rays from the object; and

an imaging optical member disposed between the image surface and the pupil surface for introducing the image of the object into the image surface,

wherein said imaging optical member comprises, at least, a second prism and a first prism,

wherein said second prism comprises, at least, a third entrance surface through which rays emergent from the object and passing through said aperture stop enter said second prism and a third exit surface through which the rays exit out of said second prism, said third entrance surface and said third exit surface being arranged with a second prism medium between,

wherein said first prism comprises, at least, a fourth entrance surface through which the rays emergent from said second prism enter said first prism, a reflecting surface which reflects the rays inside said first prism, and a fourth exit surface through

which the rays exit out of said first prism, said fourth entrance surface, said reflecting surface, and said fourth exit surface being arranged with a first prism medium between,

wherein said second prism and said first prism are configured to be joined to one another via a hologram element interposed between said third exit surface and said fourth entrance surface,

wherein said reflecting surface of said first prism is shaped as a concave curved surface to give a positive power for rays reflected therefrom,

wherein said fourth exit surface of said first prism is shaped as a curved surface to give a power for rays transmitted therethrough, and

wherein said third entrance surface of said second prism is shaped as a curved surface to give a power for rays transmitted therethrough.

3. An apparatus comprising:

said optical system according to claim 1 or 2 disposed between an image surface and a pupil surface.

4. An observation optical system according to claim 1, wherein said first prism medium and said second prism medium are made of a same material.

5. An observation optical system according to claim 1, wherein said first exit surface of said first prism and said second entrance surface of said second prism are substantially congruently shaped.

6. An observation optical system according to claim 1, wherein each of said first exit surface of said first prism and said second entrance surface of said second prism is shaped as a curved surface.

7. An observation optical system according to claim 1, wherein each of said first exit surface of said first prism and said second entrance surface of said second prism is shaped as a rotationally symmetric spherical surface.

8. An observation optical system according to claim 1, wherein a ghost light removing member is provided for optically non-operative faces of said first prism and said second prism so as to prevent ghost light from being introduced to the eye of the observer, said optically non-operative faces being defined as faces of said first prism and said second prism other than optically operative faces used to transmit or reflect rays.

9. An observation optical system according to claim 1, wherein said first entrance surface of said first prism is shaped as a rotationally asymmetric curved surface.

10. An observation optical system according to claim 1, wherein said hologram element is constructed and arranged to compensate both of a rotationally symmetric component and a rotationally asymmetric component of chromatic aberration of magnification by reflecting diffraction.

11. An observation optical system according to claim 1, wherein the following condition (1) is satisfied:

$$50 \text{ (degree)} < \theta < 80 \text{ (degree)} \quad (1)$$

where θ is an angle formed between a tangent to a base surface of said hologram element at an intersection with an axial chief ray and a visual axis.

12. An observation optical system according to claim 1, wherein the following condition (2) is satisfied:

$$60 \text{ (degree)} < \theta < 70 \text{ (degree)} \quad (2)$$

where θ is an angle formed between a tangent to a base surface of said hologram element at an intersection with an axial chief ray and a visual axis.

13. An observation optical system according to claim 1, wherein said first entrance surface of said first prism is shaped as a rotationally asymmetric curved surface which is constructed of a free curved surface defining only one plane of symmetry, said only one plane of symmetry coinciding with a plane (Y-Z plane) in which an optical axis is folded.

14. An observation optical system according to claim 1, wherein said second exit surface of said second prism is shaped as a rotationally asymmetric curved surface that has an action of compensating at least one of rotationally asymmetric aberrations including a rotationally asymmetric coma and a rotationally asymmetric astigmatism, which are generated at said

eyepiece optical member.

15. An observation optical system according to claim 1, wherein said second exit surface of said second prism is shaped as a rotationally asymmetric curved surface that has an action of compensating at least one of rotationally asymmetric aberrations including a rotationally asymmetric coma and a rotationally asymmetric astigmatism, which are generated at said eyepiece optical member, and said rotationally asymmetric curved surface is constructed of a free curved surface defining only one plane of symmetry, said only one plane of symmetry coinciding with a plane (Y-Z plane) in which an optical axis is folded.

16. A head-mount type image display apparatus comprising:

a main frame in which said observation optical system according to claim 1 is arranged;

a support member which supports said main frame on a head of the observer so as to hold the exit pupil of said observation optical system at the position of the eye of the observer; and

a speaker member which provides a sound for an ear of the observer.

17. A head-mount type image display apparatus comprising:

a main frame in which said observation optical system according to claim 1 is arranged;

a support member which supports said main frame on a head of the observer so as to hold the exit pupil of said observation optical system at the position of the eye of the observer; and

a speaker member which provides a sound for an ear of the observer,

wherein said main frame is provided with an observation optical system for a right eye and an observation optical system for a left eye, and

wherein said speaker member comprises a speaker member for a right ear and a speaker member for a left ear.

18. A head-mount type image display apparatus comprising:

a main frame in which said observation optical system according to claim 1 is arranged;

a support member which supports said main frame on a head of the observer so as to hold the exit pupil of said observation optical system at the position of the eye of the observer; and

a speaker member which provides a sound for an ear of the observer,

wherein said speaker member is constructed of a earphone.

19. A photographing optical system according to claim 2, wherein said first prism medium and said second prism medium are made of a same material.

20. A photographing optical system according to claim 2, wherein said fourth entrance surface of said first prism and said third exit surface of said second prism are substantially congruently shaped.

21. A photographing optical system according to claim 2,

wherein each of said fourth entrance surface of said first prism and said third exit surface of said second prism is shaped as a curved surface.

22. A photographing optical system according to claim 2, wherein each of said fourth entrance surface of said first prism and said third exit surface of said second prism is shaped as a rotationally symmetric spherical surface.

SUB A97 23. A photographing optical system according to claim 2, wherein a ghost light removing member is provided for optically non-operative faces of said first prism and said second prism so as to prevent ghost light from being introduced to an eye of an observer, said optically non-operative faces being defined as faces of said first prism and said second prism other than optically operative faces used to transmit or reflect rays.

24. A photographing optical system according to claim 2, wherein said fourth exit surface of said first prism is shaped as a rotationally asymmetric curved surface.

25. A photographing optical system according to claim 2, wherein said hologram element is constructed and arranged to compensate both of a rotationally symmetric component and a rotationally asymmetric component of chromatic aberration of magnification by reflecting diffraction.

26. A photographing optical system according to claim 2,

wherein the following condition (1) is satisfied:

$$50 \text{ (degree)} < \theta < 80 \text{ (degree)} \quad (1)$$

where θ is an angle formed between a tangent to a base surface of said hologram element at an intersection with an axial chief ray and a visual axis.

27. A photographing optical system according to claim 2, wherein the following condition (2) is satisfied:

$$60 \text{ (degree)} < \theta < 70 \text{ (degree)} \quad (2)$$

where θ is an angle formed between a tangent to a base surface of said hologram element at an intersection with an axial chief ray and a visual axis.

28. A photographing optical system according to claim 2, wherein said fourth exit surface of said first prism is shaped as a rotationally asymmetric curved surface which is constructed of a free curved surface defining only one plane of symmetry, said only one plane of symmetry coinciding with a plane (Y-Z plane) in which an optical axis is folded.

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29. A photographing optical system according to claim 2, wherein said third entrance surface of said second prism is shaped as a rotationally asymmetric curved surface that has an action of compensating at least one of rotationally asymmetric aberrations including a rotationally asymmetric coma and a rotationally asymmetric astigmatism, which are generated at said eyepiece optical member.

30. A photographing optical system according to claim 2, wherein said third entrance surface of said second prism is shaped as a rotationally asymmetric curved surface that has an action of compensating at least one of rotationally asymmetric aberrations including a rotationally asymmetric coma and a rotationally asymmetric astigmatism, which are generated at said eyepiece optical member, and said rotationally asymmetric curved surface is constructed of a free curved surface defining only one plane of symmetry, said only one plane of symmetry coinciding with a plane (*Y-Z* plane) in which an optical axis is folded.

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